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an ordinary scatter-gun. On the broken winding shores, however, which are characteristic of Montana rivers, often clothed with wood, or buttressed with badland rocks, there is little difficulty in approaching this solitary, meditative bird, who has no friend to warn him, and whose self-absorption at his lonely meal is so complete. He can be descried half-a-mile away and stalked warily from the rear, what time his eager gaze betokens the immediate proximity of some precious stream-borne prey.

It is from this cause, too, that private property is so great a protection to the herons on West Highland sea-lochs. The tourist collector can mark his quarry from the deck of his yacht, but he hesitates to land to achieve its destruction, and herons can rarely be shot from a boat.

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## THE CATALINA ISLAND QUAIL.

BY JOSEPH GRINNELL.

SIX specimens of quail from Santa Catalina Island, California, present characters constantly different from those of the series of mainland quail examined. While the degree of difference is not great, it requires no straining of the eyes to distinguish them. The differences seem to be significant of insular isolation under the peculiar set of factors which have resulted in differentiating many other species of animals and plants on the same island. It is convenient that the quail also be provided with a name, and I propose the following:

### ***Lophortyx catalinensis*** new species.

SPECIFIC CHARACTERS.—Similar to *Lophortyx californicus vallicola*, but about 9 % larger throughout, and coloration somewhat darker; similar to *L. c. californicus*, but larger and much less deeply brownish dorsally.

TYPE.—♂ adult; No. 6134 Coll. J. G.; Avalon, Santa Catalina Island, California; November 25, 1904; collected by J. Grinnell.

MEASUREMENTS.—In millimeters; the difference in dimensions between males and females of *L. c. vallicola* is so minute, that the two sexes are lumped together.

	Sex	Wing	Tail	Culmen	Depth of Bill	Tarsus	Middle Toe and Claw
Coll. Howard Wright	♂	113.5	104.5	10.3	7.0	31.0	38.5
Coll. Howard Wright	♂	116.0	103.5	10.2	7.7	30.1	37.0
No. 6134 Coll. J. G.	♂	119.7	110.0	10.7	8.0	32.0	39.5
Coll. Howard Wright	♀	118.0	105.0	10.3	7.7	30.1	38.0
No. 6136 Coll. J. G.	♀	117.0	104.0	10.9	7.6	30.8	37.3
No. 6135 Coll. J. G.	♀	116.5	103.0	10.6	7.8	31.5	39.0
Average of the above 6 skins from Catalina Is.		116.8	105.0	10.5	7.6	30.9	38.2
Average of 21 skins, both sexes, from mainland of southern California		107.1	95.0	9.8	6.8	29.2	35.1

REMARKS.—The bulkiness of *catalinensis* is at once apparent when one sees it among specimens of the mainland *vallicola*. The tail is particularly long, the rectrices being proportionately broader. The bill is heavier, and the toes and tarsi decidedly stouter. These characters hold equally in the males and females. In coloration *catalinensis* shows a deepening of shades especially on the lower surface. In both sexes the flanks and lower tail-coverts are more broadly streaked with brown; the terminal black edgings of the lower breast feathers are broader, and the light markings beneath are suffused with deeper ochraceous. Especially in the female of *catalinensis* is the lower surface darker than in *vallicola*, due to the encroachment of the dark portions of each parti-colored feather upon the light part. The dorsal surface is not however much browner than in *vallicola* — it is decidedly slaty as compared with the deep bright vandyke brown of *californicus* from the vicinity of San Francisco Bay.

Mr. H. C. Oberholser comments (Proc. U. S. Nat. Mus., XXII, 1900, p. 229) on "one male and one female from Santa Catalina Island. They seem rather darker and more ochraceous than extreme examples of *vallicola*, but are identical with birds from the San Joaquin Valley. The species has probably been intro-

duced from the mainland." No mention is made of measurements. I do not know where the type-locality of *vallicola* is. Nothing more exact has been published than "interior valleys of California," as far as I know. I am using skins from the San Gabriel Valley, Los Angeles County, as typical of *vallicola*.

In 'The Auk' (Vol. XV, July 1898, p. 234) I made the statement that "The 'Quail' is not native on the [Catalina] island, but was originally introduced from the mainland." This assertion I now wish to retract. It *may* be that quail from the mainland have been liberated on the island, as I have been repeatedly informed. But when I followed up these rumors, I never obtained any definite information to confirm them. Moreover, as stated beyond, I now have good reason to believe that quail were on the island before the advent of white men. It seems to be "natural" for the usual observer to conclude that quail could not have been native on the island. For instance, Cooper (Orn. Cal., 1870, p. 550) says: "It is also numerous on Catalina Island, but was probably carried there originally, as a flight of eighteen miles at once would probably be too far for a bird with so short wings." But there are many animals on the island which are undoubtedly native, being of such habits and character that only by natural means can their presence be accounted for. Geologists tell us that evidence points towards a time when the Santa Barbara Islands were a part of the mainland. This would easily explain the origin of their fauna and flora, the components of which are in so many instances slightly differentiated from their mainland representatives. In view of the differences characterizing the Catalina Island Quail it seems to me most probable that they belonged to the original fauna.

On August 16, 1905, I interviewed an old-timer by the name of James C. Johnston, who now lives on his ranch at Cactus Flat, in the San Bernardino Mountains. "Captain" Johnston went to Catalina April 15, 1859, and lived there 21 years. I saw the remains of his old home at Johnston's (Johnsons, on the maps) Harbor on August 31, 1903. Captain Johnston affirmed to me that quail were already on the island when he went there in 1859, and that he and the other sheep-men had always considered them to be native. He never knew of any having been brought over from the mainland. I believed him implicitly, as he told me many

things about the natural history of the islands which coincide in detail with my own observations.

Professor Chas. F. Holder, an authority on the natural history and ethnology of the California coast islands, believes the quail to be native on Catalina Island. He assures me (in a letter dated April 8, 1906) of their constant abundance there from the time of his first acquaintance with the island 21 years ago.

Therefore the characters of *Lophortyx catalinensis*, as here pointed out, appear to be significant of long isolation, rather than of acquisition within a few years.

*Pasadena, California.*



## ISOLATION VERSUS NATURAL SELECTION.

BY LEONHARD STEJNEGER.

In a recent paper in 'The Auk' (XXIII, April, 1906, pp. 161-171) Mr. Hubert O. Jenkins has given a very instructive account of the 'Variation in the Hairy Woodpecker (*Dryobates villosus* and subspecies)', accompanied (p. 163) by a map of the geographical distribution of the various subspecies recognized by him.

In looking at the map I was forcibly struck by the fact that the boundaries of the various forms do not coincide with those of the various 'life zones' commonly recognized by North American zoölogists. The nearest approach to such a coincidence is the range of *Dryobates villosus leucomelas* and the so-called boreal zone. In the United States the other subspecies show a certain agreement with the two main east and west divisions of the transcontinental belts, the humid and the arid divisions of the transition, upper austral and lower austral life zones. It is a curious fact, however, that while the zoölogists do not recognize an east and west division of the boreal belt, the distribution of the woodpeckers in question clearly indicates that the Pacific slope of the continent included in the boreal zone has some forms as markedly separated from the eastern forms as those further south.